

## ON FOUR NEW SPECIES OF EUCALYPTUS.

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## 1. EUCALYPTUS SEEANA, sp. nov.

Syn. presumably *E. tereticornis*, Sm., var. *linearis*, Baker & Smith, 'Research on the Eucalypts,' p. 74.

A smooth-barked tree of medium size, with blotches on the bark, most closely resembling that of *E. tereticornis*; sometimes with a grey smoothish bark reminding one of that of *E. punctata* and *E. propinqua*.

*Juvenile leaves* petiolate, narrow-linear and falcate, say 4 inches long and  $\frac{3}{8}$  inch wide, with numerous prominent transverse veins.

*Mature leaves* with long slender petioles, the leaves attaining a length of 9 inches and more, with an average width of, say,  $\frac{5}{8}$  inch; texture rather thin, equally dull on both sides, with numerous minute transverse veins; the intramarginal vein distinct and somewhat removed from the edge of the leaf. The foliage slender, graceful and drooping.

*Buds* narrow, the operculum long and tapering, of the *tereticornis* type. The inflorescence usually up to seven in the head in the axils of the leaves, the peduncle about  $\frac{3}{4}$  inch long and the pedicels about  $\frac{1}{4}$  inch in length.

*Fruit*.—The peduncle and pedicel of the fruit are but slightly angular. Fruit small, nearly hemispherical, its diameter about  $\frac{3}{16}$  inch; the rim well defined, forming a broadish band with the top of the rim truncate and the valves (three or four in the specimens seen) well exerted.

This is a species that I have had under observation for a considerable period, but I hesitated to raise it to specific rank until I had seen it in the field.

The narrowness of the young foliage is an obvious character, and attracts the attention of the non-botanist. This narrowness sharply separates it from *E. tereticornis*, its closest ally, which has broad juvenile leaves. As regards *E. propinqua*, Deane & Maiden, its superficial resemblance to *E. Seeana* is undoubted, but the buds sharply differentiate the two species, to say nothing of other differences.

The timber is deep red in colour, and Mr. District Forester Wilshire, of Grafton, informs me that it bears a high reputation for durability. He has sent me a piece of a fence post from Nymboida which has been in the ground for thirty years and which is perfectly sound. It is known locally as "Stone Gum."

Mr. J. L. Boorman and I found it a few miles from Grafton on the Glen Innes Road, and also on the Coramba Road. Mr. District Forester Wilshire states that it is plentiful at Nymboida in the Clarence River district. I have also seen it between the Clarence and Richmond Rivers. I received it from the Macleay River in 1893 from Mr. Forester MacDonal under the name of Grey Gum. Its range (it has often been confused with *E. tereticornis*) is a matter for further enquiry.

Mr. Augustus Rudder\* refers to a very narrow-leaved variety of *tereticornis* in the Stroud district, with wood "rather lighter red in colour than the other" (*tereticornis*). He refers to the Booral and Stroud districts, but since we have indubitable *tereticornis* with very narrow leaves, and Mr. Rudder (who very kindly presented his valuable herbarium to me) is not positive that he has seen the "Stone Gum," I hesitate to state that the species comes so far south. The timber also is not "lighter red," and I have no specimens of the new species from Mr. Rudder.

It was collected by Leichhardt at Binnandale (*sic*), but whether this is in New South Wales or Queensland I do not know.

I have received specimens from Rockhampton (Queensland) which I doubtfully refer to *E. Seeana*.

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\* Agric. Gazette N.S.W. Jan. 1896, p. 15.

I name this graceful and useful species in honour of Sir John See, K.C.M.G., late Premier and Chief Secretary of New South Wales, long my respected official superior, in whose electorate (Grafton) I first found it, and in which it is not rare. This tree will also perpetuate the memory of the late Lady See, who always evinced a keen interest in the vegetation of the State in which she was born.

2. EUCALYPTUS DEANEI, sp.nov.

Syn. *E. saligna*, Sm., var. *parviflora*, Deane & Maiden, these Proceedings, xxv., 464, 628. See also my 'Forest Flora of New South Wales,' Part iv., pp. 84-5 (July, 1903).

I am of opinion that this form should be removed from *E. saligna* (to which it possesses undoubted affinity), primarily on the ground of its broad sucker leaves. For this reason, in part, *E. dives*, *E. melanophloia*, and *E. Cambagei* are rightly considered distinct from *E. amygdalina*, *E. crebra*, and *E. goniocalyx* respectively. In Vol. xxv. of these Proceedings (Pl. xlii., figs.1-4), a mature leaf, half-grown leaf, sucker-leaf and fruits have been figured; and at pp. 464-5, under the name of *E. saligna* var. *parviflora*, this tree has been botanically described.

"Its foliage is magnificent, especially along the Glen Innes-Grafton Road (19-24-mile pegs), appearing like huge camphor laurels. Its habit is spreading, as opposed to the upright habit of Blue Gum, *E. saligna*" (E. C. Andrews).

It may be added that the fruit is uniformly smaller and more urceolate than that of *E. saligna*. Its timber is red, resembling that of *E. saligna*, but the differences have not yet been worked out. "Its butt is much like that of many ordinary Forest Red Gums of New England (*E. tereticornis*) with flaky outer bark" (E. C. Andrews).

In addition to the localities quoted in the 'Forest Flora' under *E. saligna* var. *parviflora*, I have collected it at Wallerawang, N.S.W. "As far as New England is concerned, where it is usually known as Brown Gum, it chooses especially the moist eastern edge of the plateau proper, on granite soil. Specific localities are :—Wilson's Downfall, Undercliffe; Great Dividing

Range east of Bolivia; Glen Innes and Grafton Road" (E. C. Andrews). I have also received it from Stanthorpe, Queensland, where it is a "very large tree, soft timber, thick sap, thick bark" (A. Murphy).

Its range, therefore, as far as is known at present, is the Dividing Range and spurs from near Picton Lakes in the south, to Southern Queensland in the north, its most westerly locality so far recorded being Wallerawang.

I name it in honour of my old friend Henry Deane, M.A., M. Inst. C.E., Engineer-in-Chief for Railway Construction of this State, my coadjutor in much work on the genus published in these Proceedings and whose stimulus and counsel in botanical work I have enjoyed for twenty years. He first drew my attention to this tree in March, 1888, at The Valley, Blue Mountains, and I have had it under observation ever since.

### 3. EUCALYPTUS ANDREWSI, sp.nov.

A tall tree, on an average say 80 feet in height, with a stem diameter of 2-3 feet. "On the Bulldog Hill, 3,000 feet, (between the Timbarra and Clarence Rivers), it attains a diameter of at least 8 feet, and the height of large trees is most likely from 150 to 180 feet. Here it consorts with true Blackbutts, *E. pilularis*, and Forest Oaks (*Casuarina torulosa*) which even at times rise 100 feet, and 50 or 60 feet without a branch" (E. C. Andrews).

Writing from Drake to Mr. Cambage, Mr. Andrews says:—"One tree we measured 20' in circumference, about 80'-100' to first limb, and from 150'-180' high (guess). Another 23' circumference, 170' high (?). Another we measured 25' 6" round butt (4' above ground). Blackbutt-top but about 150' high then. I suppose there were from 50 to 100 from 18' to 20' and 21' in circumference."

*Juvenile leaves* rather large and soon becoming alternate, glaucous. The youngest foliage available to me is elliptical and about 4 inches long by half the width, with petioles of  $\frac{1}{2}$  inch. "Seedlings have erect habit, with fairly large leaves; pale in colour" (R. H. Cambage).

*Mature leaves* broadly lanceolate, sometimes falcate, but apparently usually symmetrical. Dull on both sides and even glaucous,\* but ultimately glabrous and even shining; equally green on both sides, venation spreading from the base. Usually under 6 inches long and about 1 inch wide. Of a distinct peppermint odour.

*Buds* clavate, the operculum sometimes slightly umbonate. A free flowerer, the anthers reniform.

*Fruits* nearly hemispherical, about  $\frac{1}{4}$  inch in diameter; with a flat thick rim, tips of the valves flush with the mouth; peduncle thin; angular,  $\frac{1}{2}$ - $\frac{3}{4}$  inch long, pedicels about  $\frac{1}{8}$  inch in length. Fruits abundantly produced, usually six to nine in the head. The fruits remind one of those of *E. hæmastoma* var. *micrantha*.

*Bark*.—Has “peppermint” bark on the trunk and large branches; only the ultimate branches smooth. Twigs red (claret-coloured), often glaucous, usually round, apparently rarely angular.

*Timber* pale-coloured, comparatively light in weight, and very fissile, containing a few kino veins. So similar in appearance to that of *E. piperita*, Sm., that I am at present unable to indicate any difference. “Split for palings” (R. H. Cambage). “Timber seemingly preferred to all others for fencing, building, etc.” (J. L. Boorman). [In this connection it may be pointed out that the value of a timber is comparative; the best timber of a district may be inferior to that of another district.]

Known locally as “Blackbutt,” less frequently as “Peppermint” and “Messmate.” It is the “Blackbutt” of Mr. W. Christie’s paper,\* and his “Specimen No. 11” (p. 35) has been preserved. Known all over New England as “Blackbutt.” At Oban it is called “Bastard Stringybark,” and at Emmaville “Messmate” (E. C. Andrews).

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\* Glaucousness often varies a good deal with the season of the year; e.g., specimens received by me in October last were entirely dull or glaucous, others received in June of the present year are slightly shining.

Plentiful in many parts of New England, N.S.W. The species seems to attain its greatest size around Tingha. Plentiful on belts of porphyritic felsite (R. H. Cambage).

"Grows generally on granitic soils, but it frequently occurs on the junction of basaltic soils with those of poorer formation" (W. Christie).

North and east of Tingha (about 2700 feet above sea-level) and on the roads to Inverell and Guyra (R. H. Cambage); Howell (J. L. Boorman). "Following are New England localities: Wilson's Downfall, Undercliffe, Great Dividing Range west of Bolivia and Deepwater. From the 10- to 25-mile pegs along the Glen Innes-Grafton Road. Along the Glen Innes-Glen Elgin track, Kingsgate, Oban, Tingha, Drake, Glen Innes to Inverell Road, &c., &c. Broadly it selects the high rocky table-lands of New England, especially the eastern edge (if rocky and poor soil like granite), and also the large mesas which extend easterly of the mesas proper, as, for example, that large block of high land 50 miles in length between the Rocky (Timbarra) and Clarence Rivers" (E. C. Andrews). It extends to Queensland.

This species in habit, bark and timber seems to come closest to *E. piperita*. Its buds and fruits are, however, very different. It is also allied to *E. dives*, but it has not the characteristic juvenile foliage of the latter, from which it differs in other respects. Its similarity in fruits to *E. hæmastoma* has already been alluded to.

This species was first prominently brought under my notice by Mr. R. H. Cambage in October, 1903. That gentleman collected it and made extensive notes concerning it. It is named in honour of Ernest Clayton Andrews, B.A., Geological Surveyor, Department of Mines, New South Wales, who has been giving attention to the flora of New England, particularly as regards the vegetation on various geological formations, and

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\* "The forest vegetation of Central and Northern New England in connection with geological influences." Journ. & Proc. Roy. Soc. N.S.W. xi. 21, 1877.

who has made special enquiries in regard to the tree that is now called by his name.

The specimens referred to as *E. Sieberiana*, F.v.M., var. *Oxleyensis*, Deane and Maiden, in these Proceedings (xxiii., 794, 1899) for the most part belong, in my opinion, to *E. Andrewsii*. They have smaller fruits, usually more pyriform than the type, but in view of the fact that the fruits of typical *E. Andrewsii* vary more than ordinarily as ripening proceeds, it is premature to define varieties of *E. Andrewsii* at present.

The following specimens belong, in my opinion, to *E. Andrewsii*: The Peppermint of Maiden's Dorrigo Report; summit of Mt. Seaview and adjacent mountains; Tenterfield District; "White Limb" of Glen Innes; "Peppermint," Cobark, on high ground (A. Rudder); Upper Williams River (A. Rudder); "Moore's Reef on top of hill going to the Hole. Tree in general appearance much like *E. piperita*. Height about 120 feet, diameter about 3 feet, with spreading and irregular smooth upper branches to size man's leg. Soil stony with blackish mould. 11/10/93" (A. Rudder).

The Cobark and Upper Williams River specimens were referred by Deane and Maiden (these Proceedings, xxvi., 123, 1901) to *E. fastigata* (pyriform series). Included with these are some specimens which are indubitably *regnans* (*fastigata*), and I will refer in detail to the remarkable similarity of some specimens of *E. Andrewsii* to those of *E. regnans* in a forthcoming work on *E. regnans*. I will not enter into further detail at this place, since illustrations will render my observations more easily clear.

#### 4. EUCALYPTUS CONSIDENEANA, sp.nov.

A tree of medium height.

*Juvenile leaves* narrow-lanceolate, petiolate, soon becoming alternate. A common size is a length of 3 inches with a width of  $\frac{1}{2}$  inch. I have them, however, both shorter and broader. They are narrower than those of *E. Sieberiana*, F.v.M., or *E. piperita*, Sm. Of a rather strong peppermint odour, and often

of a silvery appearance. The young branchlets and seedling stems angular.

*Mature leaves* commonly oblique and falcate, broadly lanceolate. I have them up to 9 inches in length and nearly 2 inches in greatest width; they are rather thick in texture. Colour equally green on both sides, dull or shiny, blue-green or a bright sage-green. Veins strongly marked, spreading from the base, the intramarginal vein at a considerable distance from the edge, often looped (brachydodromous). "Leaves hang straight down" (Cambage).

*Buds* usually clavate and sometimes with pointed opercula.

*Flowers*.—Anthers uniform.

*Fruits* usually pyriform in shape, often nearly conical, rather more than  $\frac{1}{4}$  inch in diameter. The valves often well sunk below the rim, but the points of the valves occasionally protruding. Sometimes the rim is slightly domed and the valves rather more exerted. The rim broad, smooth, well-defined and usually red in colour.

A medium-sized tree with grey tough bark to the tips of the branches, said bark being of that subfibrous character well known in Australia as "peppermint," very like that of *E. piperita*, but very different from that of *E. Sieberiana*.

*Timber*.—Wood pale-coloured, with kino rings, remarkably like that of the common Sydney Peppermint (*E. piperita*, Sm.). "Soft and ringy, not nearly so good as Mountain Ash, *E. Sieberiana*" (Boorman).

*Range*.—In coastal and coast-range districts of New South Wales, extending, as far as is known at present, from the Ulladulla District in the south across the country to near Goulburn, thence viâ Burragorang to the Blue Mountains (Springwood), and the Penang Mountain near Gosford.

Mr. Deane and I first collected it near Springwood in 1888. I have received it during the last four or five years from the following localities—Pigeon House Mountain, near Milton; grows to within 100 feet of the top, on sandy, rather barren soil; also sandy ground at Burrill, Ulladulla (R. H. Cambage); Wingello



(J. L. Boorman); top of mountain east of Burragorang (R. H. Cambage); Penang Mountain (A. Murphy).

*Affinities.*—The closest affinity of this species is to *E. Sieberiana* and *E. piperita*; in fact, it is possible that it is a hybrid between these two species. The bark is fibrous like that of *E. piperita*, and the general appearance of the tree reminds one of that species. The leaves, buds and fruits are reminiscent of *E. Sieberiana*, though the leaves are perhaps thinner. The narrow juvenile foliage leaves, however, separate the new species from any with which it is most likely to be confounded.

That the species possesses strong affinity to *E. stricta*, Sieb., there is no doubt; while its affinity to *E. fastigata*, Deane and Maiden, is considerable, in points other than that of the shape of the fruits. It was referred to in these Proceedings by Mr. Deane and myself (1900, p. 109) as *E. stricta* var.; and (1901, p. 123) as a form of *E. fastigata*.

The species can be most conveniently distinguished by its pyriform fruits and "peppermint" bark; the narrow sucker-leaves are also characteristic. Mr. R. H. Cambage, who has prominently brought this tree under my notice, gives the local names as "Peppermint" or "White Mahogany;" Mr. Boorman as "Messmate."

I name this species in honour of First-Assistant Surgeon D. Consider, one of the founders of Australia. In reviewing the "Historical Records of New South Wales" (Vol. i., Part 2) in the 'Sydney Morning Herald' of 23rd July, 1892, I drew attention to the fact that Consider's letter, dated 18th Nov., 1788, to Sir Joseph Banks, is perhaps the most interesting one in the collection to the student of economic botany. From the following passage it would appear that Consider was the founder of the Eucalyptus oil industry. "We have a large peppermint tree which is equal, if not superior, to our English peppermint. I have sent you a specimen of it. If there is any merit in applying these and many other simples to the benefit of the poor wretches here, I certainly claim it, being the first who discovered and recommended them." At this time a bottle of Eucalyptus oil

was sent to Sir Joseph Banks by Governor Phillip. I further wrote in the review, "I think some effort should be made to rescue the name of the first user of Australian plants from oblivion. I trust that at least a species will be named after the pioneer before many months are over."

I regret that the matter slipped my memory on more than one occasion, but I now dedicate to his memory a species very closely allied to that from which he distilled the first Australian Eucalyptus oil.